

Image-of-Mendeleev-s-Periodic-Table

Groups	I		II		III		IV		V		VI		VII		VIII		
Oxides Hydrides	RO RH		RO RH ₂		R ₂ O ₃ RH ₃		RO ₂ RH ₄		RO ₃ RH ₅		RO ₃ RH ₂		R ₂ O ₅ RH		RO ₄		
Periods ↓	A	B	A	B	A	B	A	B	A	B	A	B	A	B	Transition series		
1	H 1.008																
2	Li 6.939		Be 9.012		B 10.81		C 12.011		N 14.007		O 15.999		F 18.998				
3	Na 22.99		Mg 24.31		Al 29.98		Si 28.09		P 30.974		S 32.06		Cl 35.453				
4 First series: Second series:	K 39.102 Cu 63.54		Ca 40.08 Zn 65.37		Sc 44.96 Ga 69.72		Ti 47.90 Ge 72.59		V 50.94 As 74.92		Cr 50.20 Se 78.96		Mn 54.94 Br 79.909		Fe 55.85	Co 58.93	Ni 58.71
5 First series: Second series:	Rb 85.47 Ag 107.87		Sr 87.62 Cd 112.40		Y 88.91 In 114.82		Zr 91.22 Sn 118.69		Nb 92.91 Sb 121.75		Mo 95.94 Te 127.60		Tc 99 I 126.90		Ru 101.07	Rh 102.91	Pd 106.4
6 First series: Second series:	Cs 132.90 Au 196.97		Ba 137.34 Hg 200.59		La 138.91 Tl 204.37		Hf 178.49 Pb 207.19		Ta 180.95 Bi 208.98		W 183.85				Os 190.2	Ir 192.2	Pt 195.09

Achievements

- He left some gaps in his periodic table for some of the then unknown elements based on properties of other elements in the group. He named these missing elements as - eka-boron, eka-aluminium, eka-silicon

eka-boron → Scandium

eka-aluminium → Gallium

eka-silicon → Germanium.

eka-silicon

• 72 g/mol

• 5.5 g/cm³

• High m.p.t

Germanium

72.59 g/mol

5.36 g/cm³

as c.

2. Mendeleev corrected the doubtful atomic weights of some elements eg: Indium, Beryllium and uranium.
3. He made a group 0, dedicated to noble gases, when these gases were discovered they could be placed in a new group without disturbing existing order.
4. He considered similarity in properties rather than atomic mass.

Co	Ni	Vanadium	Cr
(58.93)	(58.71)	(50.94)	(50.20)

Limitations

i) Anomalous pair

Pairs of elements in which the elements with a higher atomic weight is placed before that of the lower atomic weight element in order to maintain similarity in chemical properties.

Co	Ni	V	Cr	Te	I	Ar	K
58.9	58.7						

ii) Position of Hydrogen:

Position of hydrogen is not justified. Alkali metals and halogen both have properties common to hydrogen.

iii) Position of isotopes

Isotopes of an element have different atomic weights but there is no position for isotopes in Mendeleev's periodic table.

iv) Position of Lanthanides and Actinides

Lanthanides and Actinides have not been provided

separate place.

V) Anomalous place of transition and coinage metals.

Transition elements were placed along with typical elements under the same group. Coinage elements were placed with alkali metals.

VI) Position of group VIII

Three triads of transition elements were placed in group VIII, they should have been given separate place.